WHAT IS CLAIMED IS:

1. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal a PKC activator in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.

2. The method of claim 1 wherein the PKC activator selectively activates PKCα, PKCδ, and PKCε.

3. The method of claim 1, wherein the PKC activator is a macrocyclic lactone, a benzolactam, a pyrrolidinone or a combination thereof.

4. The method of claim 3, wherein the macrocyclic lactone is a bryostatin class or neristatin class compound.

5. The method of claim 3 wherein the PKC activator is bryostatin-1 through bryostatin 18 or neristatin-1.

6. The method of claim 1, wherein the cognitive ability enhanced is learning, memory, or attention.

7. The method of claim 5, wherein the animal is a primate.

8. The method of claim 5, wherein the animal is a non-primate.

9. The method of claim 1, wherein the amount of PKC activator administered is in an amount effective to treat cognitive impairment of a neurological disease or disorder.

10. The method of claim 9, wherein the neurological disease is Alzheimer's Disease, multi-infarct dementia, the Lewy-body variant of Alzheimer's Disease with or without association with Parkinson's disease; Creutzfeld-Jakob disease, Korsakow's disorder, or attention deficit hyperactivity disorder.

11. The method of claim 9, wherein the disorder is -associated with age, electro-convulsive therapy or brain damage.

12. The method of claim 11, wherein the brain damage was caused by stroke, an anesthetic accident, head trauma, hypoglycemia, carbon monoxide poisoning, lithium intoxication or a vitamin deficiency.

13. The method of claim 1, wherein the PKC activator is administered in an amount effected to cause an increase in sAPP.

14. A method for altering cellular modulation of ion channels comprising administering a PKC activator in an amount effective for altering cellular modulation of ion channels and a pharmaceutically acceptable carrier.

15. The method of claim 14 wherein, said modulation is *in vivo* or *in vitro* modulation.

16. The method of claim 15, wherein said ion channel is a K^+ or Ca^{++} channel.

17. A method for treating neurotumors comprising administering macrocyclic lactone in an amount effective to treat said neurotumors and a pharmaceutically acceptable carrier.

18. The method of claim 17 wherein, the macrocyclic lactone is a bryostatin class or neristatin class compound.

19. A method for modulating sAPP comprising administering a macrocyclic lactone in an amount effective to modulate sAPP and a pharmaceutically acceptable carrier.

20. The method of claim 19 wherein, the macrocyclic lactone activates PKC.

21. The method of claim 19 wherein, the macrocyclic lactone is a bryostatin class or a neristatin class compound.

22. The method of claim 19 wherein, the macrocyclic lactone is bryostatin-1 through bryostatin 18, or neristatin-1.

23. A method for modulating α-secretase comprising administering a macrocyclic lactone in an amount effective to modulate α-secretase anda pharmaceutically suitable carrier.

24. The method of claim 23 wherein, the macrocyclic lactone is a bryostatin class or a neristatin class compound.

25. The method of claim 23 wherein, the macrocyclic lactone is bryostatin-1 through bryostatin 18, or neristatin-1.

26. The method of claim 23 wherein, the macrocyclic lactone is administered *in vivo* or *in vitro*.

27. The method of claim 23 wherein, the modulation of α-secretase reduces amyloid plaque formation and enhances cognitive ability in a patient with Alzheimer's Disease.

28. A method for treating Alzheimer's Disease comprising administering to a patient a macrocyclic lactone in an amount effective to treat Alzheimer's Disease and a pharmaceutically acceptable carrier.

29. A method for treating Alzheimer's Disease comprising administering bryostatin-1 to a patient in an amount effective to treat Alzheimer's Disease and a pharmaceutically acceptable carrier.

30. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal a bryostatin or a neristatin class compound in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.

31. A method for enhancing cognitive ability in a human or animal, comprising administering to said human or animal bryostatin-1 in an amount effective for enhancing cognitive ability in a pharmaceutically acceptable carrier.

32. A method comprising the modulation of α-secretase through the administration of a pharmaceutically effective amount of a bryostatin or a neristatin class compound and a pharmaceutically acceptable carrier.

33. A method for modulating α-secretase comprising administering bryostatin-1 in an amount effective to modulate α-secretase and a pharmaceutically acceptable carrier.

34. A method for providing a neuroprotective effect for cell comprising administering a bryostatin or neristatin class compound in an amount effective to provided a neuroprotective effect for cells which suffer from a hypoxic event and a pharmaceutically acceptable carrier.

35. A method for providing a neuroprotective effect for cell comprising administering bryostatin-1 in an amount effective to provided a neuroprotective effect for cells which suffer from a hypoxic event and a pharmaceutically acceptable carrier.

36. A method for the reduction of amyloid plaque formation comprising administering bryostatin-1 in an amount effective to reduce amyloid plaque formation and a pharmaceutically acceptable carrier.